

# AN INTRODUCTION TO PARAPSYCHOLOGY

AN OPEN LEARNING UNIT

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## **INTRODUCTION**

This booklet will be looking at:

- \* Scientific study of the paranormal
- \* Extra-Sensory Perception
- \* Pre-Cognition, Telepathy and Clairvoyance
- \* Psycho-Kinesis
- \* "Ghosts"
- \* Out-of-Body Experiences
- \* Near-Death Experiences

Interest in the paranormal is high as shown by fictional series like "X Files" and factual series like "Strange, But True". Public opinion polls find that as many as a quarter of those questioned claimed to have experienced premonitions or telepathic experiences.

Susan Blackmore surveyed public opinion through the "Daily Telegraph" and the BBC's "Megalab" programme with around 6000 respondents. She found that 59% said "yes" to the question: "Do you believe in ESP, eg: telepathy or clairvoyance?" This breaks down to 70% of female respondents and 48% of males saying "yes". Surveys in countries varying from Canada, Iceland, India, Japan, and USA have found belief in the paranormal among between 50 to 75% of respondents.

The psychology study of the paranormal has quite a long and controversial history. Most people's experience of the paranormal is through performances on stage or television. These are controlled by the performers. Whereas parapsychology attempts to control what is happening, and to isolate any real psychic abilities:

We should not therefore, be surprised that lab investigations of even well-known psychics fail to live up to their promise (Cassells 1991 p37).

Parapsychology is controversial, in that for many psychologists, such study is not science but "pseudo-science". Throughout this century, the scientific view has predominated in psychology. This is the idea that every behaviour can be explained, and observed under experimental conditions. The explanation of behaviour is in terms of a physical cause. Thus paranormal activity challenges this view.

ACTIVITY 1 - What is parapsychology?

Parapsychology is the scientific study of the

paranormal. What paranormal activities are studied as part of parapsychology?

So it is very important to establish what we mean by parapsychology. It is the structured study of the following behaviours:

a) Extra-sensory perception (ESP) - usually seen to cover telepathy, clairvoyance, and pre-cognition, while clairvoyance and pre-cognition together are called GESP (general ESP).

b) Telepathy - sending, or perceiving, of thoughts from one person to another.

c) Clairvoyance - the perception of objects beyond normal senses.

d) Pre-cognition - the prediction of the future. So, for example using a pack of cards, telepathy would involve guessing the card from the "sender", while clairvoyance would predict the order of shuffled cards before anyone looks. But pre-cognition would predict the order of the cards before shuffled.

e) Psycho-Kinesis (PK) - the ability to move things by a process of mind over matter. It is usually divided into macro-PK and micro-PK.

f) Psi phenomenon - this is a general term used to describe all the above.

Parapsychology may also include out-of-body experiences (OBEs) - eg: astral projection; near-death experiences (NDE); travelling clairvoyance; poltergeists. It does not usually include astrology, UFOs and alien abductions, and cryptozoology (eg: Loch Ness monster).

#### BOX A - Types of Methods used in Parapsychology

When studying parapsychology, there are two main types of research methods used:

i) Quantitative methods - the collection of a large amount of data from experiments usually, to see whether a pattern appears that is statistically significant. What we mean here is that the results are different to what would be expected by chance alone. This is based on the premise that everybody possesses psychic abilities in a small way.

ii) Qualitative methods - the subjective accounts of the experiences of individuals who have shown

paranormal behaviour. Usually concentrating on individuals who claim to be psychic in a special way.

Experiments in parapsychology were started by J.B.Rhine in the 1930s at Duke University in America. After 20 years of work, he estimated that 60% of psychic experiences occurred during dreams, 30% were "waking impressions" or "hunches", and the rest sensory hallucinations.

The history of paranormal research is said to have began in the 19th century, when the Fox sisters claimed to hear tapping from a dead peddler in the cellar. Soon the sisters were giving public demonstrations for the neighbours. In 1888, they admitted that they were pretending. As always some people still believed it to be real.

Interest in such things flourished in the second half of the last century. Spirits became able to talk through floating trumpets or mediums could produce "ectoplasm" (a mysterious substance very similar to gauze).

#### BOX B - Fraud in Parapsychology

The history of psychic claims is littered with cases of fraud. For example, in 1906 Charles Eldred (a medium), who claimed to materialise spirits at his seances, was found to merely dress up in the darkened room.

More recently, a 17 year old boy ("Tim"), who claimed psychokinetic abilities, was filmed at Edinburgh University, and shown to be using trickery (Delanoy 1987).

From the other side, there are occasions when fraud has not been detected when it was trickery. James Randi, the magician who is an "arch-debunker" of psychics sent two individuals to Project Alpha at McDonnell Parapsychology Lab in the USA. They were told to claim psychic ability, but if discovered cheating to admit the truth. The researchers at McDonnell believed them to be true psychics.

## **RESEARCH METHODS USED IN PARAPSYCHOLOGY**

ACTIVITY 2 - How to study the paranormal?

How might the paranormal be investigated in a controlled and scientific manner?

1. EXPERIMENTS - these can be carefully controlled in order to eradicate any tricks or cheating. Furthermore, they allow for replication, and the statistical analysis of results.
2. FIELD INVESTIGATIONS - for example, visiting the place of poltergeist sightings.
3. CASE STUDIES - investigating individual claims of paranormal experiences. J.B.Rhine, after 30 years of work had drawn together approximately 15 000 such cases.
4. META-ANALYSIS - this is a relatively new statistical technique which allows different studies to be compared and analysed, in order to find any patterns across a large amount of data. It is too complex to need worry about how it works.

But it is not without its critics. For example, large effects will appear even in studies with methodological flaws (Hyman 1985).

## **IS PARAPSYCHOLOGY A VALID AREA FOR SCIENTIFIC STUDY?**

The paranormal is a difficult area to pin down because it covers many things, and is open to fraud more than any other area of psychology. Many of those involved in the entertainment aspect of the paranormal are accused of being mere "magicians". One of the best examples has been Uri Geller.

Geller claims to be able to focus his mental powers, and to bend, for example, spoons and forks. This he has done many times in front of audiences. But for some, he is a clever "magician" using slight of hand. Which ever it is, he has benefited from these activities, and is very wealthy.

### **The Case of Uri Geller: Magician or Psychic?**

Marks and Kammann (1980) examined the evidence for Uri Geller's psychic powers very carefully because as an

individual he has very high scores on many tests of psychic ability. It also brings into question the methods used by parapsychologists, and whether researchers can be deceived.

(i) PERCEIVING DRAWINGS INSIDE A SEALED ENVELOPE

It is quite possible to see through the envelope, say Marks and Kammann. When they tried an experiment asking 48 participants to see as much as possible through the envelope in 22 or 50 seconds, the participants did as well as Geller.

(ii) FIXING WATCHES AND CLOCKS

This was a favourite of the television and stage shows, the ability to make what appears to be broken clocks and watches to start again. Marks and Kammann found that jewellers using only the body heat of their hand started 60 of 106 watches (a 57% success rate).

Then the authors used a group of students following Geller instructions on how to start the watches (with only a 38.4% success rate) compared to 68.9% success using simple body heat of holding the watch.

(iii) CLAIMS OF TELEPATHY

Marks and Kammann believe this to be "stage magic". For example, the ability to "receive", while blindfolded, the drawing being made in front of them. This could be achieved by cheating (eg: listening to the pencil movements during drawing).

(iv) TARG AND PUTHOFF'S(1974) WORK

These two psychologists attempted to test Uri Geller under controlled conditions, and found remarkable results suggesting he did have psychic powers. But Marks and Kammann are critical of the methods used, and in some cases, the lack of control.

(a) "Target drawing" - the sender selects words at random from the dictionary and then draws a picture, while Geller in another room receives the information, and makes his own drawing. Two independent judges matched the 13 drawings to avoid experimenter bias. Geller achieved 10 out of 13, but passed on 3. So in effect, he achieved 10 out of 10. The probability of this happening is 3 in 10 million.

Marks and Kammann accuse the experimenters of "data polishing"; that is choosing the best examples to quote in their reports.

(b) A dice is shaken in a tin, and Geller has to write down the number before the tin is opened. Geller achieved 8 out of 10 correct, and passed on 2. So again, 100% success rate, with a probability of 1 in 1 million of this happening by chance. Marks and Kammann suggest fraud. For example, Geller was left alone in the room, and may have looked at the dice.

(c) Perceiving the drawings in an envelope - Geller achieved no better than chance here.

Marks and Kammann conclude that Geller's results are in part the product of the "Koestler fallacy". This is the mistaken assumption that odd matches (eg: guessing the correct number of the dice) cannot occur by chance. There is a tendency to notice and remember odd matches, and not to notice non-matches.

This is a general problem for parapsychology. It is sometimes known as overlooking the principle of equivalent odd matches (ie: one coincidence is as good as others for psychic research).

It is also possible that other factors are involved in Geller's high scores - equipment malfunction in the experiments; deception; self-fulfilling prophecy; popular stereotypes; or unseen causes. When these possibilities are removed, then high scores or scorers can be trusted as due to psychic powers.

### ACTIVITY 3 - Cheating in Experiments

How may it be possible to cheat in an experiment that involves guessing the card the person opposite is looking at?

### BOX C - Ways of Cheating in Parapsychology

Thus it is important to be aware of fraud more than in any other research area of psychology. Morris (1986) shows a number of ways in which "pseudo-psychics" may attempt to cheat on the ESP "target selection" test. This involves the "sender" focusing on a particular target (eg: a card in the Zener pack), and the "receiver" writing down what they think is the answer.

(i) Bias selection of target - if the same target is chosen by the receiver every time, it will eventually by chance be right.

(ii) Discover selection procedure - the sender



may be using a pattern to select the cards, which could be discovered by the receiver.

(iii) Switch target after selection - the receiver is able to change the sender's choice after they have guessed. For example, if the sender and receiver are face to face, distraction and sleight of hand are possible.

(iv) Monitor several potential targets - the receiver may make a number of guesses, but only show one guess at the end.

(v) Gain access to other information - for example, to know what targets are not chosen will narrow down the guessing.

(vi) See through the barrier or the card.

(vii) Switch the answer after target revealed.

Not surprisingly, some scientists see all paranormal phenomena as fake. However, in a New Scientist survey in 1973, 88% of respondents felt that the study of ESP to be "a legitimate scientific undertaking".

If parapsychology is to develop as a legitimate part of psychology, it must show that it is not open to exploitation by "magicians". This puts great emphasis on the research methods used. The experiment when used should be controlled, and allow no "cheating" possible, and subjective reports of the paranormal must be carefully scrutinized. Thus:

it is the techniques and methodology that are used to gather the evidence that are of greatest significance (Rostron 1992 p22).

#### BOX D - Testing Claimants of Psychic Ability

Testing claimants of psychic ability can be difficult, leaving aside the aspects of fraud. So Wiseman and Morris (1985) recommend certain guidelines when individuals come forward claiming such abilities.

(a) In what context does the individual use their claimed abilities; for example, to help people, or to make money?

(b) What is the claimant's motivation for being tested? If it is to "prove" what they believe, then negative test results can lead to a drop in self-esteem. Alternatively, the same may happen with positive test results for people who want to "prove" they do not have psychic abilities. There is also the effect on the belief of others, and the challenging of delusional beliefs.

(c) What are the details of the claimant's background? For example, is there a family history of the ability, or are the individuals members of a magician's circle?

(d) What is the type of psychic ability being claimed?

(e) Does the claimant believe that certain conditions are conducive to their abilities? For example, a darkened room.

(f) Establish details of the claim before the experiment begins.

Fraud (in this case, deliberately changing the results) is not unknown in science generally. But parapsychology is not helped by the case of Samuel Soal, a researcher at the University of London (between 1930-50s). He found exceptionally high success rates at naming which of five cards would appear next. One women tested got 707 correct in guessing the next card out of 2600 attempts (chance predicts a score of 520 only). When his original data sheets were found, they showed changes to improve the success rate (Markwick 1978).

#### SUMMARY

- \* Parapsychology is the scientific study of the paranormal; in particular ESP, which includes telepathy, clairvoyance and pre-cognition.

- \* ESP is most researched because it can be studied in controlled situations.

- \* Fraud, whether deliberate or accidental, is the biggest problem for parapsychologists.

- \* When designing experiments in parapsychology planning is paramount to guard against extraneous variables.

- \* Parapsychologists are divided over whether someone like Uri Geller is a genuine psychic or using stage magic.

- \* A large majority of the population believe in the paranormal when questioned.

- \* J.B.Rhine is seen as the founder of parapsychology after his 20 years of work at Duke University, USA (1930s-50s).

## **EXTRA-SENSORY PERCEPTION**

This section looks at the following topics:

- \* Research on ESP using remote viewing, "ganzfeld", and altered states of awareness.
- \* Factors influencing ESP.

The term "extra-sensory perception" was coined by J.B. Rhine (who pioneered the study of parapsychology) as the method of receiving information without use of any of the five normal senses. Or it could be seen as the flow of information from the environment to the individual by means not understood. What in everyday language may be called telepathy.

### ACTIVITY 4 - ESP

Think of some examples when you think you knew something other than by your normal senses.

Often people say that they knew things which could not have come from the normal senses. For example, Joicey Hurth in 1955 in Wisconsin, who knew when her little daughter had had an accident in another place (reported in Blackmore and Hart-Davis 1995).

Unfortunately reports like this are too subjective, and need to be better controlled.

### ACTIVITY 5 - ESP Experiment

Take a pack of cards and remove all the cards except the 12 picture cards (ie: jack, queen and king in each suit).

Shuffle the cards and asked the one participant (the sender) to look at a card while the other participant (the receiver) attempts to decide what the card is. Obviously the latter cannot see the card.

Compare the success rate over a number of trials with what is expected by chance. Are they showing psychic ability?

The most common technique used to study ESP is that of the Zener cards. These are cards containing five different symbols in a pack of 25, and a comparison is made between actual results and mean chance expectation (MCE). The five symbols are a square, a circle, a cross, a star, and three waves. But there can be "sensory leakage" with this technique - ie: obtaining answer from sensory clues; eg: sender's reaction.

## Remote Viewing

### ACTIVITY 6 - Remote Viewing Experiment

Choose 5 places nearby and go to one at an agreed time; meanwhile another person writes down which of five places they believe you are at. How do the results of a number of trials compare to chance?

In this technique, individuals, who are the senders, are taken to undisclosed destinations (say a famous castle or building), and once there must send the image of what they see to the receiver (an individual waiting in the lab). The receiver is required to draw the image they feel is being sent. One of the best known set of experiments were performed by Targ and Puthoff (1977) (see Box E).

### BOX E - Targ and Puthoff (1977)

Procedure - receiver and experimenter remain at university lab, while another experimenter and sender travelled to an undisclosed location (out of 12). The experimenter and the participant at the university were ignorant of the list of 12 places. The same places were not used twice. Afterwards an independent judge compares the descriptions by the sender and the receiver, and ranks them for accuracy.

Results - A total of 55 experiments with 10 targets; only one series of 8 experiments not significant; largest significance was 0.0000018.  
Conclusion - Strong evidence for remote viewing.

Unfortunately, the methodology used by Targ and Puthoff has been criticised. It is very important when highly significant results are found to show that this was not a freak occurrence. This is done through the process of replication. Marks, Kammann, Mitchell et al replicated Targ and Puthoff's American studies in New Zealand between 1976 and 1978. They did 35 replications and found no support or significant results.

Marks and Kammann (1978) are also critical of aspects of the experimental design by Targ and Puthoff. For example, the written descriptions of the sites were so vague or general that the matching of sender and receiver's descriptions by judges was not without difficulty. Schlitz and Gruber (1980) responded to this criticism, and made use of five judges for the descriptions. This showed a success rate with odds of 1 in 200 000 by chance.

Marks and Kammann also claim that Targ and Puthoff selected only the data they wanted from hundreds of other studies not reported.

## **"Ganzfeld"**

Often it is argued that there are too many distractions with the other techniques, such that ESP cannot work properly. The belief is that ESP occurs during reduced sensory input and increased internal attention. "Ganzfeld" is not sensory deprivation because sometimes soothing music playing.

So with the "ganzfeld" method, the individual is placed in sensory isolation. This is a windowless room, and wearing a set of headphones usually playing white noise. The eyes are covered by halves of ping-pong balls through which a red light is faintly visible. The individual then focuses on receiving or sending information. The individuals in sensory isolation may choose from 4 pictures to concentrate on sending.

Blackmore (1980) reviewing the studies found 18 of 31 to show significant results. Honorton and Schechter (1986) found successful performance for first time participants, particularly if they had prior psi experiences, mental discipline and scored FP (feeling/perceiving) on the MBTI personality questionnaire <sup>1</sup>. 28 participants who fitted this three factor model had a 64% success rate. But Broughton et al (1989) found that such people had only a 43% success rate.

Honorton et al (1989) performed a meta-analysis of 11 studies producing results that were significant with odds of 1 in 20 000 by chance. The best results occur with senders and receivers who know each other, and individuals with previous experience of "ganzfeld". Recent research from Edinburgh claims 48% accuracy in choosing from four photos as to which was "sent" from the room next door (quoted in "Secrets of the Psychics" 1997).

## **ESP and Altered States of Awareness**

There is an argument that normal awareness restricts the responsiveness to ESP. So interest has developed into

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<sup>1</sup> Myers Briggs Type Indicator (MBTI) is a personality questionnaire based on the work of Carl Jung. It assesses personality along four dimensions: extraversion-introversion (EI), sensing-intuition (SN), thinking-feeling (TF), and judging-perceiving (JP). These dimensions interact to give personality types.

ESP during dreams or hypnosis (both altered states of awareness). When the sleeper enters REM (Rapid Eye Movement) or dream sleep, another individual writes down what they receive; the sleeper is then woken to record the dream. In the morning, an independent judge assesses the correctness of the drawing by the receiver on a scale of 1 to 100. Often this research has used particular individuals (see Box F).

BOX F - Ullman et al (1989)

Ullman et al (1989) record the example of Malcolm Bessent who claimed to dream about the future. His dreams were written down and checked by an unknown judge. This produced 7 of 8 hits.

The Maimonides Dream Lab has attempted the same procedure with a larger number of participants. Between 1964 and 1972, they produced 15 formal studies, of which seven showed significant outcomes. Vaughan and Utts (1988), more recently, recorded 233 of 379 hits (a 83.5% success rate). But there has been a general failure to replicate this work.

Honorton (1977) reviewing other studies of ESP and altered states of awareness found 22 of 42 studies with hypnosis to be significant; 10 of 13 studies were significant where the participants were relaxed, and 9 of 16 for meditation.

#### ACTIVITY 7 - ESP in Dreams Experiment

Agree beforehand with someone who will be the sender and the receiver. Each morning both individuals make a note of the dreams they just had. Get an independent person to compare notes after a week. Do they match?

### **Other Factors with ESP**

- Is there a certain personality type that performs better in ESP tasks?

Eysenck (1976) proposed that high E scorers (extraverts) on his EPI (Eysenck Personality Inventory) would do better because they have less cortical arousal (electrical activity in parts of the brain). There is limited research to back up this idea: 53 studies attempted to find a correlation between ESP and extraversion. 17 studies found, as expected, a

significant positive correlation; one found the opposite - a significant negative correlation; and the rest no correlation (Sargent 1981).

The other dimension of Eysenck's personality theory is neurotic-stable. Research has found that low scorers here (ie: emotionally stable personality types) are better at ESP tasks. But the results are not significant though (Palmer 1978).

#### ACTIVITY 8 - ESP and Personality Experiment

For this activity you will need a personality test (eg EPI) and an ESP task (eg Zener cards).

The aim is to see if there is a correlation between the score on the personality test and the ability at the ESP task.

It may also be possible to analyse the results with a statistics test to see if the correlation is significant (probably Spearman's rho test).

- Is there a difference in ESP ability in those who believe in its existence and those who don't?

This is often known as the "sheep" (believers) and "goats" (non-believers) paradigm. Logically it would be expected that "sheep" would do better because they believe, and might try harder.

On the task of guessing which card comes next, Schmeidler and McConnell (1958) used 1157 participants making over 251 000 guesses. The pattern that appeared showed that "sheep" had an average of 5.10 hits per 25 guesses, and "goats" 4.93. This is a significant difference.

Palmer (1971) summarised 17 studies finding that in 13 studies "sheep" did better (six being significantly better), and for the rest there was no difference.

- Does ESP work better at certain times of the day?

James Spottiswoode, an ESP researcher in California, claims that ESP is four times more likely to work at 13.30 local sidereal time.

Sidereal time is the moment when a particular star or constellation is always overhead (in this case, Virgo). It is not clear why this occurs, but Spottiswoode has found this pattern from comparing around 1500 ESP lab experiments.

#### SUMMARY

- \* ESP is the receiving of information without

the use of the normal senses.

- \* Research findings vary from highly significant results (eg Targ and Puthoff) to those finding no support for ESP (eg Marks et al).

- \* Meta-analysis of studies has found consistent effects in certain situations or with certain participants (eg those who know each other).

- \* "Sheep" (believers in ESP) usually achieve better results than "goats" (non-believers).

- \* ESP has been studied experimentally using "remote viewing", "ganzfeld", and Zener cards, as well as during altered states of awareness.

## **PRE-COGNITION**

### ACTIVITY 9 - Pre-cognition Experiment

Ask people around the area, or even the local town to give you any premonitions they believe they have. Keep precise details and then compare with news etc to see if the premonition occurs as predicted.

Pre-cognition is the ability to predict what will happen in the future. Rhine (1955) quotes 191 cases of attempt to prevent an event (eg: car crash) based on the pre-cognition of its occurrence. 31% were unsuccessful, mainly through lack of specific information in the pre-cognition. The others were successful in taking steps to avoid the consequences.

Schmidt (1969) asked participants to predict which of four lights would come on; there were 63 066 trials of which 16 458 were correct. That is approximately 26% correct, while chance predicts 25% correct. Though this appears a small difference, because of the large number of trials the results are significant to 1 in 100 million. Even large amounts of data have been used with meta-analysis (see Box G).

### BOX G - Honorton and Ferrari (1989)

This research was a meta-analysis of 309 studies by 62 investigators, including over 50 000 participants in around two million trials. 30% of the studies were significant. The authors tried to isolate confounding variables, and found that the results were not due to individual studies or investigators: there was no significant relationship between the quality of the study and the results. Good studies had pre-planned analysis, randomized targets, specific controls of randomisation, and recording of



responses. Participants chosen from prior performance were better than new individuals. Thus the authors recommend the use of selected participants who are tested individually, and given trial by trial feedback. In this case, 7 out of 8 studies fitting this bill were significant.

## **CLAIRVOYANCE**

### ACTIVITY 10 - Clairvoyance Experiment

Take four pictures, and hide one in a sealed envelope. Then ask another person to guess which picture is in the envelope. Do this a number of times. How do the results compare to chance (which is 25% correct)?

Clairvoyance is the ability to perceive something without the use of normal senses. Anderson and McConnell (1961) asked 9 year old children to guess which of four mathematical signs (+, -, x, ÷) was in a sealed envelope. Out of 5560 total guesses, chance predicts 1112 correct, but the children achieved 1192.

Brand (1975), unbeknown to the students, placed an envelope containing the answers to the examination paper on the table of half the students taking the examination. This group did significantly better in the examination than the other half.

## **TELEPATHY**

Telepathy is the sending or receiving of thoughts from another person. Marks and Kammann (1980) addressed the telepathic claims of the American magician, Kreskin, who in his stage show is able to read people's thoughts. Or so it appears.

(i) He is able to broadcast his own thoughts - for example, he says he is thinking of a number between 1 and 50, it is odd, but not the same odd digits (eg: 11). Then asked how many of the audience had thought of 37. A number of the audience respond.

Marks and Kammann show that in such a situation, there are a limited number of choices. They asked a sample of 202 people the same question as Kreskin, and 35% chose 37. Of the other answers, 23% chose 35, 10% chose 39, 5% 31, 9% 19, 10% 17, 5% 13, and only 3% said any other. The probability, thus, of a number of a large audience putting their hands up is quite high.

(ii) Kreskin claims to read thoughts - for example,

individuals are thinking of a particular object they have in their possession. Marks and Kammann suggest a probability match - ie: the magician asks questions as vague cues to narrow down the options before guessing.

(iii) The magician has an unopened envelope with a written message from an individual in the audience, and he is able to tell what it says. In some cases, Marks and Kammann found no author of the message in the audience. Or the message produced by the author in the audience was substituted for an already prepared one, using a magic tray.

(iv) Kreskin is able to find a hidden paycheck in the theatre. With practice it is possible to read cues from people's reactions, say Marks and Kammann.

Thus generally Kreskin uses stage magic and probability matches.

## **PSYCHO-KINESIS (PK)**

Psycho-kinesis involves the influence of the environment using unknown means. This is usually divided into "micro-PK" or "macro-PK". The former involves the ability to control the number that is rolled on a dice, or the number that appears on a random number generator (RNG). "Macro-PK" involves the ability to move physical objects or change stable systems (like altering the room temperature).

There is some discussion over the difference between PK and pre-cognition. When an outcome is predicted (pre-cognition), it may instead have been produced by PK.

### ACTIVITY 11 - PK Experiment

You will need a number of ants in a confined area, which can be divided into four areas. Then by PK try and make all ants go to one particular area. How can you measure the results compared to chance?

### **Macro-PK**

This ability can be sub-divided into 6 categories:

(i) "Appearances" - to make objects appear. For example, the Indian religious leader, Sai Baba, appeared to produce gold trinkets from empty hands.

- (ii) "Vanishings" - to make objects disappear.
- (iii) "Transportations" or "teleportations" - to make objects disappear in one place and appear in another.
- (iv) "Penetrations" - to make objects move through barriers without damage. For example, a faith healer may appear to penetrate the skin of a patient without cutting.
- (v) "Modifications" - to transform objects in type, property, form, size or colour. The medium, D.D.Howe, was able to modify himself to pick up hot coals without harm.
- (vi) Application of force - eg: levitation.

There is also the area of "bio-PK": the ability to change living organisms. Bernard Grad et al (1961) studied the laying on of hands by healer, Oskar Estabany. Using mice with specially cut wounds, the healer holds the cage for 15 minutes, twice daily for 20 days. The wound examined after 20 days was found to be smaller than the control group which had no holding of the cage.

But this improvement could easily be due to "natural" factors. Other studies have shown that holding rat pups for a short time each day leads to their improved growth. The attention in both examples could lead to stimulation of the body's immune system or growth hormones.

Grad (1963) asked Estabany to hold a flask of plant seeds for 15 minutes daily for 14 days. Compared to a control group, these plants became taller, and had a greater yield, but showed no difference in the number of seeds germinated.

Concerning humans, Braud and Schlitz (1983) asked individuals to concentrate on reducing the worry among target participants in the next room. The level of electro-dermal activity of the target population was constantly measured. This is the amount of minute electrical activity on the skin, and is higher if individuals are worried or aroused. The 16 targets showed a 10% drop in their electro-dermal levels, which is significantly more than the control (worried participants who were not targets).

## **Micro-PK**

### ACTIVITY 12 - Micro-PK experiment

This involves getting participants to control by PK the number that is rolled on a dice. You

will need to do this a large number of times in order to compare the results to chance.

There has been more research on "micro-PK" because it is easier to control, and to analyse the results of a large number of trials, particularly with the use of a random number generator (RNG). The techniques used include influencing the radioactive decay of an atom (ie: speeding up or slowing down the Geiger counter), the diffraction pattern of a beam of light, the fall of a cascade of polystyrene balls, or the "direction" taken by electrical noise.

One well-known technique is the "Schmidt machine". This is four lamps which randomly light, and the participant must concentrate on making the 4th lamp light. This has also been developed with nine lamps. In one study, there was a 30% hit rate, which is significant (Schmidt and Pantas 1972).

Schmidt also reported successful results with pre-recorded tapes done up to weeks earlier. This is known as "time-displaced PK". Others have not replicated these effects.

Robert Jahn has done the most to study the phenomenon of "micro-PK". Jahn was a rocket specialist, and after his detailed research in this area was demoted from dean of the engineering faculty at his university.

It is not possible to use everyday examples, argues Jahn, because of the problems of lack of control. Using examples at race courses would not work because many people will be wanting different outcomes. There is also what is called "psi missing" where some people might consistently get the opposite of what they were trying to will.

Thus Jahn set up a highly controlled experiment which has been running for over 15 years. The RNG he built produced either negative or positive numbers, and the task is to will one or the other. Very similar to willing heads or tails when tossing a coin. The main results are detailed in Box H.

Jahn has faced every criticism of this procedure, and attempted to remove them. The most common criticism being that the machine is not truly random, and will not produce equal numbers of negative and positive numbers over a long period. This has been tested.

Fraud is always mentioned. Maybe the machine can be influenced by kicking it or waving a magnet nearby (as participants are left alone with the machine), or static from the participant's clothes. Jahn has allowed for these problems in the machine's design.

Participants have also been measured in three conditions:

some make more positive numbers appear, others more negative, and the control group who just sit there.

Furthermore, participants must do a certain number of trials, and cannot leave when they think they are doing well (thereby distorting the results).

#### BOX H - Jahn's Results

The first set of results were reported in 1986 after a quarter of a million trials. By 1998 it was over 14 million trials with more than 100 different participants. Throughout there is a small significant effect of 0.1%, which means for every 1000 trials, there is 1 more positive or negative number than chance would predict.

Jahn has found this small effect using other equipment; a random thermal movement of electrons across a transistor junction, and a random mechanical cascade of 9000 polystyrene balls.

Slightly more controversial is the claim that the machines in California can be influenced by individuals in Kenya, New Zealand, England and Russia. Or that the same results occur, if participants work before or after the actual running of the machine. Jahn has attempted always to explain his results through quantum physics.

Despite all these controls, more than any other researcher in parapsychology, Jahn has been criticised. For example, many of the significant results come from one individual who works at the lab (known as Operator 10). Operator 10 contributed to 15% of the 14 million trials, and produced around half of the total "successes" (McCrone 1994). Removing this individual, the results are barely significant. Jahn argues, though, that other operators show more powerful effects.

Critics, like John Alcock and Ray Hyman (members of the Committee for Scientific Investigation of Claims of the Paranormal - CSICOP) also suggest that the data has been sorted - ie: only the best examples chosen to include in the final results. This sorting could account for the overall significant results. This is a direct accusation of fraud by Jahn and his workers, and has never been made publicly.

The problem here is not that Jahn's experiments are methodologically flawed, but that sceptics are refusing to accept the evidence.

The only way to deal with the arguments is controlled replication, which is limited with Jahn's work. Stan Jeffers, though, has attempted such a replication. Participants were asked to bend a beam of light, and so distort the interference pattern created as it passed through a diffraction slit. After using 80

participants, even self-proclaimed psychics, the results are the same as chance only.

Radin and Nelson (1990) made a meta-analysis of RNG studies with good methodology and demonstrated the robust and repeatable nature of the studies, and they were significant. While Radin and Ferrari (1990) performed a meta-analysis of PK studies with dice (see Box I).

#### BOX I - Radin and Ferrari (1990)

This research is a meta-analysis of PK with dice including 148 studies to "will" a particular number on the dice. There were around 2500 participants with over 2.5 million trials. 44% of the studies showed significant results (which is exceptionally unlikely by chance), and 31% of the control studies as expected were non-significant. The control studies would involve seeing how often a particular number appeared when rolling the dice (with no PK involved).

Then the authors coded the studies for quality on 12 criteria. This led to a reduced effect, but it was still significant. Even removing the extremely significant individual studies, and those with investigators with large number of studies, there is still a significant effect.

The "micro-PK" research produces consistent, reliable results which are not due to poor methodology or confusing variables. However the effect is weak (Broughton 1991).

#### SUMMARY

- \* "Micro-PK" is the most widely researched area of psychokinesis. It is the ability to "will" small changes in the environment, like the number rolled on a dice.

- \* Using a random number generator, Robert Jahn has studied over 14 million trials, and found a consistently small significant effect. This has been supported by meta-analysis of other studies.

## **SPONTANEOUS CASES OF THE PARANORMAL** **("GHOSTS")**

### ACTIVITY 13 - Definitions

What is the difference between a ghost, a poltergeist, and an apparition?

Certain aspects of the paranormal cannot be studied in the lab experiment, in particular, poltergeists. These are distinct from apparitions (spirits of the dead), and hauntings (odd phenomena occurring in specific locations). Poltergeists are believed to be an aspect of PK, and are known as "recurrent spontaneous PK" (RSPK). A "recurrent localised apparition" (ghost) is seen in the same form by different people at different times, while a "collective apparition" is seen by several people simultaneously. There is also a "crisis apparition": a one time occurrence in connection with a crisis for the person who is seen as an apparition.

Recurrent apparitions typically engage in the same specific behaviour each time they are observed. Rarely do they interact with the observers. Poltergeist events usually involve noises and object movements, and seldom last more than a few months. Apparitions, however, can continue for years.

One of the earliest researched ghosts is known as "Miss Morton's Ghost" and was seen at a house in Cheltenham in 1882. A number of sightings and noises occurred, and suggestions were made as to the cause. But no conclusive evidence was established.

Gauld and Cornell (1979) collected over 500 cases, and found common features like the unexplained movement of objects. The data about poltergeists is limited. There is some suggestion that it focuses on unhappy individuals or may be linked to epilepsy (see the examples in Box J). Roll (1978) found that of 92 cases of poltergeists, nearly a quarter of the "focus" had shown a trance-like state or mild seizure.

### BOX J - Examples of the "Focus"

Poltergeists are often seen, by parapsychologists, to be connected to a young person, who is under psychological stress. The "focus" may be producing the phenomena by PK.

Bender (1974) reports the case of a Bavarian legal secretary and her effect on objects and electricity. The apparent observations at the office centred around this woman because when she left, so the poltergeist activity stopped.

A similar case revolved around a Cuban refugee (Julio) at a Florida warehouse (Roll 1976).

## OUT-OF-BODY EXPERIENCES (OBE)

About 10% of the population claim to have experienced this phenomena at least once. It often occurs at times of stress, sensory deprivation, deep relaxation or close to death. The individual seems to leave the body and look down upon themselves. Often known as "astral projection"; some people can induce these at will and take control.

Morris et al (1978) worked with "Blue", an undergraduate student who was able to control his OBEs. It was found that the state in terms of physiology was similar to the dreaming state of sleep. There was some suggestion that his presence could be felt during the OBE.

Auerbach (1991) reports the case of Keith Harary, who visited his kittens in the next room while having a OBE, and the kittens responded as if he was physically present.

Osis (1974) attempted a larger study using over 100 respondents to newspaper ads. General trends were observed - the experiencer was not "conscious", arrival at a destination was sudden, and there was a clear vision of the destination. Years of work involving participants visiting another place to report an object were inconclusive. In some cases, it appeared that ESP was being used. The OBE could be a "manufactured experience" relating to clairvoyance and "remote viewing" (Auerbach 1986).

It is almost impossible to establish which is the correct explanation unless the OBE can be measured in some way. Osis and McCormick (1980) did report changes in a "strain gauge" when certain individuals had OBEs. But even this may be due to PK.

There is some suggestion that OBEs may be a form of dreaming called "lucid dreaming" as 44% of OBEs occur during sleep, and 28% on the edge of sleep (called the hynagogic state) (Auerbach 1991). But the OBE is reported as feeling different to a dream.

The OBE may forever remain one of the few human experiences that can convince the experient that his soul can travel free of the body, but it may never convince the scientific community (Broughton 1992 p254).



## **NEAR-DEATH EXPERIENCES (NDE)**

These experiences are reported when an individual comes near to death and survives. They may float down a dark tunnel towards a bright light with a feeling of peace. Sometimes they meet dead relatives. Seven students out of a sample of 1000 (0.7%) reported a NDE (Locke and Shontz 1983).

Moody (1975) has described NDEs in most detail by collecting case studies. Moody's collection and then Ring's (1980) interviews with 102 individuals have shown a pattern. Ring identified a five stage model which most NDEs go through:

- (i) Deep peace and a sense of well-being: nearly 60% of those questioned reported such a feeling.
- (ii) Separation from the body: 37% of Ring's sample reported a disconnection from their body, and almost half of those remembered looking down on their body from above.
- (iii) Entering the darkness: about a quarter reported a sense of travelling through a dark space or tunnel. There may also be a life review at this stage, or an encounter with a "presence", or meeting dead loved ones, or a decision to return or go on.
- (iv) Seeing the light: some individuals did not have a decision, but moved straight into a brilliant light.
- (v) Enters the light: this is reported as a world of exceptional beauty.

Ring (1982) says that "it seems to be the same journey with different individuals encountering different segments of what appears to be a single, common path" (quoted in Broughton 1992 pp258-9).

Noyes and Slyman (1979) analysed 189 responses and reduced the reports to three factors: feelings of great understanding, depersonalisation (eg: detachment from the body), and hyperalertness.

Explanations of NDEs vary from a purely psychological experience, to temporal lobe stimulation and lack of oxygen to the brain (Blackmore 1993), to a recalling of birth (Sagan 1984).

## **GENERAL PROBLEMS WHEN INTERPRETING PARANORMAL EVENTS**

There are a number of problems and issues to consider before we can accept the results of parapsychological research as conclusive.

(i) The problems of replicability - many significant results have not been found in later replications by other psychologists. This is a key element of the scientific method - the ability to replicate.

(ii) Ignoring negative events - for example, when you think of a person, and they don't 'phone at that moment, rather than they telephoned when you were thinking about them. In everyday life, only certain cases are remembered, and thus distorts the true nature of what happened.

(iii) If PK existed, why has no one used it on, for example, a casino (Greenhouse 1975). If individuals had real PK abilities, then it would be possible to use it consistently in different situations or to their real advantage.

(iv) Lack of consistency - some studies show individuals with abilities in, say, telepathy and clairvoyance, while other studies find individuals good at one but not the other.

Marks and Kammann (1980) highlight what they call "self-perpetuating beliefs"; ie: beliefs that are not logical, and allow misinterpretation of apparent psychic events:

(a) Selective perception - Hastorf and Cantril (1954) interviewed two groups of fans after an American football match. Both believed that the opponents had committed more fouls, even though in reality the number was equal for both teams.

(b) Expectations - for example, students asked to find a correlation between mental symptoms and drawing features did, even when there was a zero correlation.

(c) Prior knowledge - for example, knowledge of the outcome of a battle beforehand, and individuals will find the outcome well predicted by a story. This is sometimes called the "hindsight effect".

(d) Forer's effect ("fallacy of personal validation") - this is the belief that everything is true at some time (particularly if ambiguous), and the predictions are given personal validation. Marks and Kammann gave participants, the same personality description, but telling them it was unique to them. 91% agreed that it applied to them.

DeMuth (1979) making use of biorhythms lied about the "critical days". The students believed them to be right, and found personal validation to support it.

(e) Overconfidence even if wrong - Fischhoff et al (1977) used betting about confidence that right about general knowledge questions. For example with odds of 5 to 1, students must be correct 83% of time to break even; in fact only correct 72% of time.

In another example, Singer and Benassi produced a magic show for students and then asked for an explanation for what had happened. Of those students given no explanation, 75% said psychic power. But even those given a simple explanation (60%) or a detailed one (50%) believed it to be psychic power.

(f) Population stereotypes - the typical answer given by a group of individuals is relatively easy to predict, and not evenly distributed. So in each case, the apparent psychic has a high possibility of guessing correctly, and certainly it will be above chance. Examples of population stereotypes are given in Box K.

#### BOX K      Population Stereotypes

Example 1: "I am thinking of a number between 1 to 10, but not 3". Of 197 respondents, 62% said 6,7 or 8.

Example 2: "I am thinking of 2 simple drawings". 69% of answers were house, circle, square, stick figure, triangle, boat, tree or cat.

Example 3: "I am thinking of 2 simple geometric figures". Of 590 respondents, 203 said circle and triangle, 146 circle and square, 66 triangle and square, only 28 said same, and 147 said something else.

## CONCLUSIONS

Cassells (1991) draws the following conclusions about research in parapsychology:

- (i) Many claims of psychic power have been found to be fake.
- (ii) Many experiments supporting psychic power have been found to have methodological problems.
- (iii) Many experiments have failed to show psychic power.
- (iv) There is a lack of consistency in the research findings.

After over a century of research into the paranormal, there are very few definite conclusions to be drawn. The methods used have become increasingly sophisticated, as have the types of criticism required. Meta-analyses of large areas of research claim to have found consistent, if weak effects (Blackmore 1995 p17).

There are small effects which will not go away, but the effects are not big enough to persuade the objective observer. It is down to the question of whether a person believes in the paranormal.

### BOX L - Being Sceptical

Marks and Kammann (1980) proposed a number of rules for rational thinking, thereby challenging the claims of psychic power.

- (a) Challenge vague predictions.
- (b) Challenge disprovability claims and events.
- (c) Place the burden of proof on the claimant.
- (d) Think of alternative explanations.
- (e) Be aware that negative cases are often overlooked.
- (f) The use of personal observation is not enough.
- (g) Question the source of the claim.
- (h) Emotional commitment reduces rationality.
- (i) Be aware that techniques are used to belittle sceptics; for example, certain authority cannot be questioned; sceptics are "bad people".

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